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EXAMINER	
MARTELLO, EDWARD	

ART UNIT	PAPER NUMBER
2628	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/575,578	Applicant(s) KLOMPENHOUWER ET AL.	
	Examiner Edward Martello	Art Unit 2628	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *07 August 2009*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21 and 23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21 and 23* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8 September 2009 has been entered.

2. The claims received 7 August 2009 are entered in the record.

3. Claims 1, 12, 21 and 23 are amended, claims 8, 14, 16 and 19 were previously amended, claims 2-7, 9-11, 13, 15, 17, 18 and 20 are as originally presented and claim 22 is cancelled.

4. In summary, claims 1-21 and 23 are pending in the application.

5. The amendment of claim 21 has cured the basis of the 35 U.S.C. § 101 rejection of this claim, thus, the 35 U.S.C. § 101 rejection of claim 21 is hereby withdrawn. The 35 U.S.C. § 101 rejection of claim 23 is also withdrawn.

6. Upon further consideration of the amended claims and study of the specification of the instant application, the Examiner has found support for the added term of "linearly scaling" the color values in the equations presented in paragraph 34 of the published application, 2007/0076226 A1. The specification does not use the term of linearly scaling, however, the equations perform a linear scaling operation between the clipped and/or truncated, non-linearly imposed limits at either end of the linearly scaled region.

7. The Applicant's amendment necessitated the new ground(s) of rejection that follow.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

8. Claims 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyachi et al. (U. S. Patent Application Publication 2003/0043165 A1, already of record hereafter ‘165).

9. In regard to claim 18 (Original), Miyachi teaches a `smart` clipper apparatus for primary color correction and clipping, comprising: a plurality of algorithms (‘165; ¶ 0071; ¶ 0083-0085; ¶ 0261-0263), that includes smart clipping algorithms, for mapping a source gamut to a display gamut, and a multi-step `smart` clipper module that executes said plurality of algorithms (‘165; ¶ 0071; ¶ 0083-0085; ¶ 0261-0263). Miyachi teaches color correction and clipping across 6 embodiments, thus it would be obvious to one of ordinary skill in the art that these 6 embodiments teach a plurality of algorithms.

10. Regarding claim 19 (Previously Amended), Miyachi further teaches wherein the plurality of algorithms comprises at least one of: executable gamma correction algorithms (‘165; ¶ 0262-

0263); gamut mapping algorithms to reduce brightness of digital data of a color image ('165; 0269-0271); smart clipping algorithms to correct digital data of a color image by "adding white" to out-of-gamut digital data of the color image ('165; ¶ 0071); and saturation dependent attenuation algorithms ('165; ¶0025).

11. In regard to claim 20 (Original), Miyachi further teaches wherein the smart clipping algorithms further comprise magnifying the clipping effect based on intensity of digital data of the color image ('165; ¶ 0071 – equations at the end of the paragraph show that each signal is scaled proportionally to the intensity of the signal resulting in the lower valued signals (i.e. darker) receiving less added white).

12. Claims 1-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyachi et al. (U. S. Patent Application Publication 2003/0043165 A1, already of record hereafter '165) as applied to claims 18-20 above, and in view of Myers (U. S. Patent Application Publication 2002/0041288 A1, hereafter '288).

13. Regarding claim 1 (Currently Amended), Miyachi teaches a method for correcting a color image composed of a plurality of individual colors ('165; ¶ 0022), the method comprising the steps of: correcting the gamut of the color image (adjust a color reproduction range; i.e. gamut; '165; ¶ 0004); and smart clipping the corrected image by "adding white" to out-of-gamut digital data of the color image ('165; ¶ 0071; equations at the bottom of paragraph [0071] where selecting each color signal in turn adds in a proportional amount of the remaining two color signals which is equivalent to adding white), but does not explicitly teach wherein said clipping comprises the steps of: adjusting said individual color of said out-of-gamut digital data by linearly scaling said individual colors based on a smallest value of said digital data individual

colors, wherein said adjusted smallest value is set to a known value <u>within said gamut of the color image</u>; and continues teaching scaling said adjusted colors to a maximum value based on a maximum value of one said adjusted colors ('165; ¶ 0071 – equations at the end of the paragraph show that each signal is scaled proportionally to the intensity of the signal resulting in the lower valued signals (i.e. darker) receiving less added white). Myers, working in the same field of endeavor, however, teaches wherein said clipping comprises the steps of: adjusting said individual color of said out-of-gamut digital data by <u>linearly</u> scaling said individual colors ('288; abstract; ¶ 0029) based on a smallest value of said digital data individual colors ('288; ¶ 0036; Min(RGB)) minimum of the three primary color output data words), wherein said adjusted smallest value is set to a known value <u>within said gamut of the color image</u> ('288; ¶ 0036; Min(RGB), for the benefit of removing the effective white from the dynamic range of each color signal thus allowing the following scaling step to have more signal range to boost the perceived colorfulness of the image. It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined Myers' minimum white value teachings with the color boosting teachings of Miyachi for the benefit of producing an enhanced color image by removing the effective white from the dynamic range of each color signal thus allowing the following scaling step to have more signal range to boost the perceived colorfulness of the image.

14. In regard to claim 2 (Original), Miyachi further teaches wherein the smart clipping step of "adding of white" further comprises the step of scaling with the brightness of digital data having dark digital data get less white added than bright digital data ('165; ¶ 0071 – equations at the end of the paragraph show that each signal is scaled proportionally to the intensity of the signal resulting in the lower valued signals (i.e. darker) receiving less added white).

15. Regarding claim 3 (Original), Miyachi and Myers teach the method of claim 1 and Miyachi further teaches further comprising the step of reducing overall brightness of the color image ('165; ¶ 0083-0085). Each color signal is scaled by a multiplier that varies form 0 to user or designer set maximum thus reducing the overall brightness of the color image.

16. In regard to claim 4 (Original), Miyachi and Myers teach the method of claim 3 and Miyachi further teaches wherein said reducing step further comprises the step of multiplying digital image data of the color image by a fixed value but does not teach a specific value of 0.85. Miyachi, however, does teach multiplying the input color values by constants that vary up to a value of 2 and suggests a value of 0.5 ('165; ¶ 0073). It would have been obvious to one of ordinary skill in the art at the time of the invention to have made the design choice of selecting 0.85 as a scale factor after evaluating a number of images on a targeted display just as was done in the instant application at paragraph [0037].

17. Regarding claim 5 (Original), Miyachi and Myers teach the method of claim 3 and Miyachi further teaches wherein said reducing step further comprises the step of determining the reduction as a function of an input gamut and a display gamut ('165; Abstract; ¶ 0001; ¶ 0027).

18. In regard to claim 6 (Original), Miyachi and Myers teach the method of claim 3 and Miyachi further teaches wherein said reducing step further comprises the step of determining the reduction as a function of a saturation of the incoming signal ('165; ¶0025).

19. Regarding claim 7 (Original), Miyachi and Myers teach the method of claim 6 and Miyachi further teaches wherein said function is 0 when the saturation is equal to 0, maximal when the saturation is greater than some value less than maximum but does not explicitly teach the exact value of 0.750, and teaches that it is equal to a monotonically increasing function as a

function of the saturation when the saturation is in the range between 0 and some value less than maximum but does not explicitly teach the exact value of 0.75 ('165, ¶ 0084-0090). Miyachi teaches limiting the maximum to less than one but leaves the design choice to the equipment designer. It would have been obvious to one of ordinary skill in the art at the time of the invention to choose a value such as 0.75 after evaluating a number of images on a targeted display.

20. In regard to claim 8 (Previously Amended), Miyachi and Myers teach the method of claim 1 and Miyachi further teaches the method as further comprising the steps of: performing a gamma correction on the digital image data before the step of correcting the gamut; and, performing an inverse gamma correction on the smart clipped image ('165; ¶ 0262-0263).

21. Regarding claim 9 (Original), Miyachi further teaches the method as further comprising the step of reducing the overall brightness of the color image ('165; 0269-0271 - equations these paragraphs show that each signal is scaled proportionally to the intensity of the signal resulting in the lower valued signals (i.e. darker) receiving less added white).

22. In regard to claim 10 (Original), Miyachi further teaches wherein said reducing step further comprises the step of determining the reduction as a function of a saturation of the incoming signal ('165; ¶ 0261-0263).

23. Regarding claim 11 (Original), Miyachi further teaches wherein said function is 0 when the saturation is equal to 0, maximal when the saturation greater than some value less than one but does not explicitly teach the exact value of 0.75, and equal to a monotonically increasing function as a function of the saturation when the saturation is in the range between 0 and some value less than maximum but does not explicitly teach the exact value of 0.75. It would have

been obvious to one of ordinary skill in the art at the time of the invention to choose a value such as 0.75 after evaluating a number of images on a targeted display.

24. In regard to claim 12 (Currently Amended), Miyachi teaches an apparatus (device) for primary color correction and clipping, comprising: a means for receiving digital data of a color image having a source gamut; a display having a display gamut ('165; fig. 2); one of a program memory storing and a calculation logic device providing (signal processing means) - (i) a plurality of algorithms, that includes smart clipping algorithms (adjust a color reproduction range; i.e. gamut; '165; ¶ 0004), for mapping the source gamut to the display gamut, and (ii) a multi-step `smart` clipper module that executes the plurality of algorithms for mapping the source gamut to the display gamut ('165; ¶ 0071; ¶ 0083-0085; ¶ 0261-0263); and a controller/processing unit configured to control receipt of the digital data, execute the `smart` clipper module to accomplish mapping the source gamut to the display gamut for the received digital data ('165; fig. 8), but does not teach wherein said clipping comprises the steps of: adjusting said individual colors of said out-of-gamut digital data by <u>linearly</u> scaling said individual colors based on a smallest value of said digital data individual colors, wherein said adjusted smallest value is set to a known value; and continues to teach scaling said adjusted colors to a maximum value based on a maximum value of one of said adjust colors ('165; ¶ 0071 – equations at the end of the paragraph show that each signal is scaled proportionally to the intensity of the signal resulting in the lower valued signals (i.e. darker) receiving less added white), and output the mapped digital data to the display ('165; fig. 2). Myers, working in the same field of endeavor, however, teaches wherein said clipping comprises the steps of: adjusting said individual color of said out-of-gamut digital data by <u>linearly</u> scaling said individual colors

('288; abstract; ¶ 0029) based on a smallest value of said digital data individual colors ('288; ¶ 0036; Min(RGB) minimum of the three primary color output data words), wherein said adjusted smallest value is set to a known value <u>within said gamut of the color image</u> ('288; ¶ 0036; Min(RGB)) for the benefit of removing the effective white from the dynamic range of each color signal thus allowing the following scaling step to have more signal range to boost the perceived colorfulness of the image. It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined Myers' minimum white value teachings with the color boosting teachings of Miyachi for the benefit of producing an enhanced color image by removing the effective white from the dynamic range of each color signal thus allowing the following scaling step to have more signal range to boost the perceived colorfulness of the image.

25. Regarding claim 13 (Original), Miyachi further teaches further comprising a storage device for storing received digital data and output digital data of a color image ('165; ¶0069-0071).

26. In regard to claim 14 (Previously Amended), Miyachi further teaches wherein the plurality of algorithms comprises at least one of: executable gamma correction algorithms ('165; ¶ 0262-0263); gamut mapping algorithms to reduce brightness of digital data of a color image ('165; 0269-0271); smart clipping algorithms to correct digital data of a color image by "adding white" to out-of-gamut digital data of the color image ('165; ¶ 0071); and saturation dependent attenuation algorithms ('165; ¶ 0261-0263). Miyachi's adding white is the set of equations at the bottom of paragraph [0071] where selecting each color signal in turn adds in a proportional amount of the remaining two color signals which is equivalent to adding white. It would have been obvious to one of ordinary skill in the art at the time of the invention to use Miyachi's

"adding white" to remove this constant term form the input to allow proportional scaling of the colors in further processing.

27. Regarding claim 15 (Original), Miyachi and Myers teach the apparatus of claim 13 and Miyachi further teaches wherein the smart clipping algorithms further comprise magnifying the clipping effect based on intensity of digital data of the color image ('165; ¶ 0071 – equations at the end of the paragraph show that each signal is scaled proportionally to the intensity of the signal resulting in the lower valued signals (i.e. darker) receiving less added white).

28. In regard to claim 16 (Previously Amended), Miyachi and Myers teach the apparatus of claim 12 and Miyachi further teaches wherein the plurality of algorithms comprises at least one of: executable gamma correction algorithms ('165; ¶ 0262-0263); gamut mapping algorithms to reduce brightness of digital data of a color image ('165; ¶ 0083-0085); smart clipping algorithms to correct digital data of a color image by "adding white" to out-of-gamut digital data of the color image ('165; ¶ 0071); and saturation dependent attenuation algorithms ('165; ¶0025).

29. Regarding claim 17 (Original), Miyachi further teaches wherein the smart clipping algorithms further comprise magnifying the clipping effect based on intensity of digital data of the color image ('165; ¶ 0071-0072).

30. Claims 21 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Myers (U. S. Patent Application Publication 2002/0041288 A1, hereafter '288) as applied to claims 1-17 above, and in view of Miyachi et al. (U. S. Patent Application Publication 2003/0043165 A1, already of record hereafter '165) as applied to claims 1-20 above.

31. Regarding claim 21 (Currently Amended), Myers teaches a computer readable medium, comprising instructions accessed by a processor ('288; ¶ 0018) for causing said processor to execute: but does not teach a plurality of algorithms, that includes smart clipping algorithms, for mapping a source gamut to a display comprising: executable gamma correction algorithms; gamut mapping algorithms to reduce brightness of digital data of a color image; smart clipping algorithms to correct digital data of a color image by "adding white" to out-of-gamut digital data of the color image, and continues to teach wherein said clipping comprises the steps of: adjusting said individual colors of said out-of-gamut digital data by linearly scaling said individual colors ('288; abstract; ¶ 0029) based on a smallest value of said digital data individual colors ('288; ¶ 0036; Min(RGB)) minimum of the three primary color output data words), wherein said adjusted smallest value is set to a known value ('288; ¶ 0036; Min(RGB); and scaling said adjusted colors to a maximum value based on a maximum value of one of said adjusted colors ('288; ¶ 0061-0063), and does not teach a multi-step `smart` clipper module that executes said plurality of algorithms. Miyachi, working in the same field of endeavor, however teaches a plurality of algorithms ('165; ¶ 0071; ¶ 0083-0085; ¶ 0261-0263), that includes smart clipping algorithms ('165; ¶ 0071; ¶ 0083-0085; ¶ 0261-0263), for mapping a source gamut to a display comprising: executable gamma correction algorithms ('0165; ¶ 0262); gamut mapping algorithms to reduce brightness of digital data of a color image ('165; 0269-0271); smart clipping algorithms to correct digital data of a color image by "adding white" to out-of-gamut digital data of the color image ('165; ¶ 0071; equations at the bottom of paragraph [0071] where selecting each color signal in turn adds in a proportional amount of the remaining two color signals which is equivalent to adding white) and also teaches a multi-step `smart` clipper module that executes

said plurality of algorithms ('165; ¶ 0071; ¶ 0083-0085; ¶ 0261-0263) for the benefit of providing a base computing system with multiple correction algorithms in which the specific color corrections of Myers can be incorporated to produce a bright color displayed image without apparent modification of the color tone or hue. It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the color correction system teachings of Miyachi with the color correction teachings of Myers for the benefit of providing a base computing system with multiple correction algorithms in which the specific color corrections of Myers allow the production of a bright color displayed image without apparent modification of the color tone or hue.

32. Claim 22 (Cancelled).

33. Regarding claim 23 (Currently Amended), Myers and Miyachi teach the computer readable medium of claim 21 and Miyachi further teaches wherein the smart clipping algorithms further comprise magnifying the clipping effect based on intensity of digital data of the color image ('165; ¶ 0071 – equations at the end of the paragraph show that each signal is scaled proportionally to the intensity of the signal resulting in the lower valued signals (i.e. darker) receiving less added white).

Response to Arguments

Applicant's arguments with respect to claims 1-21 and 23 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

The following prior art, made of record, was not relied upon but is considered pertinent to applicant's disclosure:

US 6018588 A	Image enhancement circuit and method using mean matching/quantized mean matching histogram equalization and color compensation – Teaches linear scaling and clipping min and max color channel values.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward Martello whose telephone number is (571) 270-1883. The examiner can normally be reached on M-F 7:30-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Xiao Wu can be reached on (571) 272-7761. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/EM/

Examiner, Art Unit 2628

/XIAO M. WU/
Supervisory Patent Examiner, Art Unit 2628